IMS Productions' Inventory Management System

An Honors Thesis (CS 498)

by

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Abstract

The state of today's economy is wrought with losses and harsh cuts in nearly all aspects of life. While the blame for this downward trend can be placed on uncontrollable facets of economics, it can also be placed on controllable facets of human error. For years, the mobile group of Indianapolis Motor Speedway Productions (IMS Productions) has endured tens of thousands to hundreds of thousands of dollars in losses every year due to employee forgetfulness and negligence. Equipment is left behind, hundreds of feet of cable remain lying on the ground, and money continues to drain out of funds in order to replace these items. Accountability and maintainability of proper equipment inventories is essential to bring about the stoppage of monetary losses due to forgotten equipment. Utilizing Microsoft's C# programming language, Visual Studio programming suite, and SQLExpress database system, this project will create a working and functional piece of software to be used as IMS Productions' inventory management system to aid them in mitigating and stopping future losses due to equipment negligence.

Acknowledgments

I would like to thank Wayne Zage for his instruction and guidance in the proper way to plan, design, create, and document a software project.

I would also like to thank Indianapolis Motor Speedway Productions for taking time out of their schedule to sit down and discuss what they wanted and how they wanted it done in an easy to understand manner.

Lastly, I would also like to thank Matt Maurer and Sarah Upchurch who aided in the creation of this project.

Worldwide, companies continue to scramble to cut costs and drive profits by any means necessary. Layoffs have become commonplace and unemployment continues to rise. As companies look to save money, one important aspect to be examined is management and technology. Activities performed by hand years ago are now automated by computers and painstaking processes now take seconds. An examination of one company, Indianapolis Motor Speedway Productions, also known as IMS Productions, demonstrates a prime example of how and why technology and management should be at the backbone of most companies today.

IMS Productions is the branch of the Indianapolis Motor Speedway responsible for filming, editing, and producing footage of all the events covered under the IMS flag. Their remote productions team covers races and events all around the world. In order to cover these events, the company utilizes two semi-trucks and multiple, smaller support vehicles to send equipment to these events. Currently, they have no way of knowing which items are on which truck before an event or which are placed back on a truck after the event. This lack of tracking and management leads to equipment being left behind which leads to high costs to replace that equipment. IMS Productions is continually paying more and more money to replace items that have been left behind as a result of a lack of proper tracking and management. By adopting a customized inventory management system, IMS Productions can severely cut down on the losses they incur as a result of forgotten equipment.

To meet the needs of IMS Productions, my project creates a simple and streamlined process for the employees of the company to check equipment in and out of a virtual database. This database stores all the information that an employee, or user, would like to enter and keeps it saved for any time they need to move it on or off a truck. To interact with the program, the user scans a barcode located on the piece of equipment with a normal barcode scanner that plugs directly into any computer. At any given time, the user is also able to view all the equipment that is currently in that database, all the equipment still in the truck, or all the equipment that has been taken off of the truck. Users are also able to take a piece of equipment and make it inactive so that it is no longer on a truck, scan it out for repair if it needs fixed, or remove it completely from the database if the company is no longer going to use it. The interface for all this is then made with standard buttons and forms which are free of clutter and can be easily navigated through.

The reasoning behind the design of the layout is two-fold. First, there are specific requirements set by IMS Production for how they want the project to look. Secondly, the employees who use this program will not necessarily be technically inclined so the overall design of the program needs to be simple. By keeping the design of the project simple, the users are able to perform more complex functions with relative ease. All the actual work is done for the users behind the scenes so the only thing they need to be concerned with is what is displayed after they do something. The decision for the various languages to code the project in is determined by IMS Productions as they are the languages that the company knows best. Working with these requirements offers a new experience to fully understand previously unknown languages and further builds upon the knowledge that I have developed through my various classes. The goal of the project is to offer IMS Productions a viable and working model of what an inventory management system should be. The project presented herein exemplifies the necessity and ease of using technology within a company. Equipment will no longer need to be left behind, employees at the events will be able to easily see what all was taken off so as to know exactly what needs to go back on. Through this project, my own personal knowledge is greater and the likelihood of equipment loss for the company is significantly reduced.

IMS Productions Inventory Management System

Team Qubit

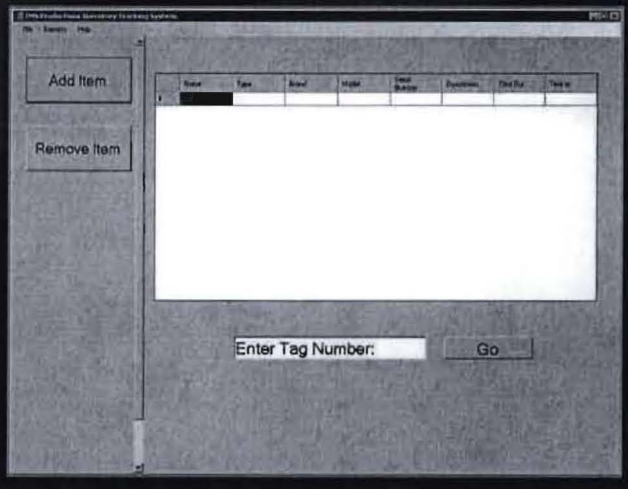
Chris Fivecoate, Matt Mauer, Sarah Upchurch

Background

- *Indianapolis Motor Speedway Productions*
- *Remote Productions team*
- *Films and produces coverage of events at IMS and on the road*
- *Has multiple trucks of expensive equipment with no way to track them*
- *An automated tracking/inventory system is required*

Solution

- *Created a virtual inventory and automated checking in and out*
- *Utilized barcode scanners*
- *Created separate inventories for each truck*
- *Allowed for checking items out for repair or inactivity*
- *Allowed for printing of reports and log files*



Specifics

- *Used C# and Windows forms in Microsoft Visual Studio*
- *Inventories consist of databases built using MySQL*
- *Item can be checked in/out of a truck or added to a Repair/Inactive log*
- *Barcode scanners implemented for 1D barcodes only*
- *Every action logged into text document*
- *Reports generated using built-in Crystal Reports in Visual Studio*

2010-2011 Computer Science Capstone Project

IMS PRODUCTIONS

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TEAM QUBIT

Content

On the previous page is a copy of a poster which was used to present this project at multiple software demonstrations, the Computer Science banquet, and the upcoming S^2ERC conference at Ball State. The actual dimensions of the poster are 30"x40" and it is matted on standard poster board. All other content of the project has been written to a readable CD-ROM so as to prevent excess paper usage. The CD-ROM has been included in a plastic case in the front pocket of the thesis binder.

Material on CD-ROM includes:

- Application files
  - Contains all the files used to create the project in Microsoft Visual Studio
- User and Operations Manual
  - Detailed explanation of how to do each function in the program
  - Explanation of how to install and run the program
- Systems Manual
  - Design diagrams and charts for the project
- Programming Manual
  - Detailed explanation of each function in the program
- Code
  - Complete listing of all the source code used for the program
- Actual program
  - A copy of the actual program in its current state
  - This program can only be run on a machine running Microsoft SQL Server 2005 and .NET 3.5 Framework
- Digital copy of this thesis

Works Cited

No works needed to be cited in the writing of this Honors Thesis or in the development of the accompanying software.

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